IN THE CLAIMS

Please amend claim 29.

1. (Original) An apparatus comprising:

a strap including a substrate having an integrated circuit contained therein, the integrated circuit coupling to a first conductor disposed on top of the substrate the first conductor being made of a thermosetting material or a thermoplastic material; and

a large-scale component having a second conductor, the second conductor being electrically coupled to the first conductor to electrically couple the large-scale component to the integrated circuit, the large-scale component including a second substrate.

2. (Original) The apparatus of claim 1, wherein the second conductor is electrically and directly coupled to the first conductor, and wherein the integrated circuit has an active surface that faces the second conductor.

3. (Original) The apparatus of claim 1, wherein the first conductor is solidified by any one of heat, electromagnetic radiation, moisture, UV exposure, and exposure to a reactive species.

4. (Original) The apparatus of claim 1, wherein the first conductor is made of a thermoplastic material having conductive fillers, the thermoplastic material having conductive fillers directly coupled to the second conductor of the large-scale component to the integrated circuit.

5. (Original) The apparatus of claim 1, wherein the first conductor is made of an inherently conductive thermoplastic material.

6. (Original) The apparatus of claim 1, wherein the first conductor is made of an inherently conductive thermosetting material.

7. (Original) The apparatus of claim 1 further comprising a conductive medium formed on the first conductor to interconnect the first conductor to the second conductor of the large-scale component.

8. (Original) The apparatus of claim 7, wherein the conductive medium is one of an isotropic material and an anisotropic material.

9. (Original) The apparatus of claim 8, wherein the isotropic material is deactivated at an area that needs not be conductive.

10. (Original) The apparatus of claim 7, wherein the conductive medium is one of a polymer carrier having conductive particles, an inherently conductive thermoplastic

material, a thermoplastic material having conductive particles or non-conductive particles coated with a conductive material, an inherently conductive thermosetting material, a thermosetting material having conductive particles or non-conductive particles coated with a conductive material, a conductive polymer, a carbon-based conductor, a carrier having conductive fibers, a carrier having conductive carbon nanotubes, a pressure sensitive adhesive having conductive fillers, and a solder.

11. (Original) The apparatus of claim 1, wherein the integrated circuit is a circuit suitable for use with one or more of the following applications: radio frequency identification tags, sensors, displays, or phase array antennas .

12. (Original) The apparatus of claim 1, wherein the large-scale component includes any on of an antenna, an electronic display, a display electrode, a sensor, a power source, a memory device, and a logic device formed on the second substrate.

13. (Original) The apparatus of claim 12, wherein the antenna is part of the second conductor.

14. (Original) The apparatus of claim 1 further comprising a non-conductive adhesive disposed between the first conductor and the second conductor, the non-conductive adhesive including either a ruptured portion to allow for contact between the first conductor and the second conductor or a sufficiently thin section between the first conductor and the second conductor to enable capacitive coupling of the two conductors through the non-conductive material.

15. (Original) The apparatus of claim 14, wherein crimping or pressing is used to cause the rupture in the non-conductive adhesive.

16. (Original) The apparatus of claim 1 further comprising a non-conductive adhesive layer forming an edge seal around the edges of the first conductor and the second conductor to hold the first conductor and the second conductor in intimate contact.

17. (Original) The apparatus of claim 1 further comprises a plurality of small particles dispensed in one of the first conductor or the second conductor, the particles to create a mechanical interlock between the first conductor and the second conductor when the first conductor and the second conductor are placed in immediate contact with one another.

18. (Original) The apparatus of claim 17, wherein at least one of the first conductor and the second conductor is made of a thermosetting or a thermoplastic material.

19. (Original) The apparatus of claim 17, wherein the particles are coated with a conductive material.

20. (Original) The apparatus of claim 17 further comprises a non-conductive adhesive layer that forms an edge-seal around the edges of the first conductor and the second conductor.

21. (Original) The apparatus of claim 1 further comprises a plurality of small and sharp particles dispensed in one of the first conductor and the second conductor to enhance contact to the first conductor or the second conductor.

22. (Original) The apparatus of claim 1 further comprises a conductive medium formed on the first conductor to interconnect the first conductor to the second conductor, the conductive medium including a plurality of small particles dispensed therein to enhance interconnection of the first conductor to the second conductor.

23. (Original) The apparatus of claim 1 further comprises one or more of a rivet, rod, staple, and wire to interconnect the first conductor to the second conductor wherein one or more of the rivet, rod, staple, and wire is inserted through the first conductor and the second conductor, the rivet, rod, staple, or wire connecting the first conductor to the second conductor.

24. (Original) The apparatus of claim 1, wherein the first conductor and the second conductor are connected through mechanical bonding, including, but not limited to, taping, crimping, or clinching.

25. (Original) A method comprising:

attaching a first conductor of a first substrate containing a functional block to a second conductor of a large-scale component, the functional block being embedded in a first substrate and being electrically connected to the first conductor, and the large-scale component being formed on a second substrate;

the first conductor being attached to the second conductor using one of thermosonic bonding and thermocompression bonding;

each of the first conductor and the second conductor being independently made out of any one of a metal, a thermoplastic material, and a thermosetting material.

26. (Original) The method of claim 25 wherein any one of or both of the thermoplastic material and the thermosetting material is inherently conductive.

27. (Original) The method of claim 25 further comprises dispensing a plurality of small and sharp particles into the material used to make one of the first conductor and the second conductor to create a mechanical interlock to enhance the attachment between the first conductor and the second conductor.

28. (Original) The method of claim 25 further comprises dispensing the functional block into the first substrate using fluidic self assembly.

29. (Currently Amended) A method comprising:

attaching a first conductor being made of a thermoplastic or a thermosetting material to an integrated circuit embedded in a first substrate, the first conductor electrically connected to the integrated circuit; and

attaching a large-scale component to the first conductor, the large-scale component electrically connected to the first conductor, and the large-scale component formed on a second substrate.

30. (Original) The method of claim 29 further comprising:

embedding the integrated circuit in the first substrate.

31. (Original) The method of claim 29 further comprising:

embedding the integrated circuit in the first substrate using fluidic self assembly.

32. (Original) The method of claim 29, wherein attaching the first conductor to the integrated circuit is accomplished by any one of screen printing, flatbed and rotary screen printing, stencil printing, ink jet printing, gravure printing, flexographic printing, pad stamping, electrostatic printing, dispensing through a needle and pipette, laminating, hot pressing, laser assisted chemical vapor deposition, physical vapor deposition, shadow masking, evaporating, extrusion coating, curtain coating, and electroplating.

33. (Original) The method of claim 29 further comprises attaching a conductive medium to a the first conductor, attaching the conductive medium to a second conductor included with the large-scale component to interconnect the integrated circuit to the large-scale component

34. (Original) The method of claim 33 further comprises using one of thermosonic bonding and thermocompression bonding to facilitate the attaching of the conductive medium to any one of the first conductor and the second conductor.

35. (Original) A method comprising:

embedding an integrated circuit into a first substrate and disposing a first conductor on the first substrate, the integrated circuit electrically connected to the first conductor, the first conductor being made of a thermosetting material or a thermoplastic material; and

electrically coupling a large-scale component having a second conductor to the integrated circuit, the second conductor being electrically coupled to the first conductor to electrically couple the large-scale component to the integrated circuit, the large-scale component including a second substrate.

36. (Original) The method of claim 35 wherein any one or both of the thermoplastic material and the thermosetting material is inherently conductive.

37. (Original) The method of claim 35 further comprises coupling the second conductor directly to the first conductor wherein an active surface of the integrated circuit faces the second conductor.

38. (Original) The method of claim 35 wherein an active surface of the integrated circuit faces the second conductor.

39. (Original) The method of claim 35 wherein the thermoplastic material has conductive fillers.

40. (Original) The method of claim 35 wherein the thermosetting material has conductive fillers.

41. (Original) The method of claim 35 further comprises disposing a conductive medium on the first conductor to interconnect the first conductor to the second conductor of the large-scale component.

42. (Original) The method of claim 41, wherein the conductive medium is any one of an isotropic material and an anisotropic material.

43. (Original) The method of claim 42 further comprises deactivating the isotropic material in an area that needs not be conductive.

44. (Original) The method of claim 41, wherein the conductive medium is any one of a polymer carrier having conductive particles, an inherently conductive thermoplastic material, a thermoplastic material having conductive particles, an inherently conductive thermosetting material, a thermosetting material having conductive particles, a conductive polymer, a carbon-based conductor, a carrier having conductive fibers, a carrier having conductive carbon nanotubes, a pressure sensitive adhesive having conductive fillers, and a solder.

45. (Original) The method of claim 35, wherein the integrated circuit is a circuit suitable for use with radio frequency, display, sensor, or phase array antenna applications.

46. (Original) The method of claim 35, wherein the large-scale component includes an antenna, an electronic display, a display electrode, a sensor, a power source, a memory device, and a logic device formed on that second substrate.

47. (Original) The method of claim 46, wherein the antenna is part of the second conductor.

48. (Original) The method of claim 35 further comprises disposing a non-conductive adhesive between the first conductor and the second conductor and either selectively rupturing a predetermined portion of the non-conductive adhesive to allow for contact between the first conductor and the second conductor, or bringing the first conductor and the second conductor sufficiently close to enable capacitive coupling of the two conductors through the non-conductive material.

49. (Original) The method of claim 48, wherein crimping or pressing is used to rupture the predetermined portion of the non-conductive adhesive.

50. (Original) The method of claim 49 further comprises forming an edge-seal around the edges of the first conductor and the second conductor to hold the first conductor and the second conductor in intimate contact.

51. (Original) The method of claim 35 further comprises dispensing a plurality of small and sharp particles in one of the first conductor or the second conductor, the particles to create a mechanical interlock between the first conductor and the second conductor when the first conductor and the second conductor are placed in immediate contact with one another.

52. (Original) The method of claim 51, wherein at least one of the first conductor and the second conductor is made of a thermosetting or a thermoplastic material.

53. (Original) The method of claim 51, wherein the particles are coated with a conductive material.

54. (Original) The method of claim 51, forming an edge-seal around the edges of the first conductor and the second conductor.

55. (Original) The method of claim 35 further comprises dispensing a plurality of small and sharp particles in one of the first conductor and the second conductor to enhance contact to the first conductor or the second conductor.

56. (Original) The method of claim 35 further comprises forming a conductive medium on the first conductor to interconnect the first conductor to the second conductor and dispensing a plurality of small and sharp particles in the conductive medium.

57. (Original) The method of claim 35 further comprises disposing one or more of a rivet, rod, staple, and wire through the first conductor and the second conductor to attach the first conductor to the second conductor.